

Serial No. 10/500,497

B-7193

Response to final Office Action dated August 7, 2007

Response Date: December 18, 2007

REMARKS/ARGUMENTS

Claims 1-22 are pending in the application. Reconsideration and a withdrawal of all outstanding rejections is hereby respectfully requested in view of the above amendments and the following remarks.

The Rejection of Claims 1-4 and 6-21 As Being Obvious Over U.S. 5,622,363 ("Beaudreau et al.") and U.S. 5,501,735 ("Pender") should be withdrawn.

Claims 1-4 and 6-21 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Beaudreau (5,622,363) in view of Pender (5,501,735). This rejection is respectfully but strenuously traversed and reconsideration and a withdrawal of the rejection is hereby respectfully requested.

The Examiner contends that Beaudreau et al. discloses all the features of pending claims 1 and 14, though acknowledges that Beaudreau et al. is deficient and fails to disclose bordering elevations. Specifically, the Examiner acknowledges that Beaudreau et al. does not disclose bordering elevations at the end of the rollers annularly encircling the respective one of the rollers and facing each other and which are located outside of the useful area of a conveying path in the processing line. The Examiner relies on Pender for its claimed teaching of the use of bordering elevations (which the Examiner considers to be the elements 70, 71, 72, 28 of Pender).

First, Applicant previously pointed out that claim 14 relates to wet processing, according to the previous amendment, and would not therefore be anticipated, nor obvious, in view of Beaudreau et al., even when combined with Pender, as Beaudreau relates to and discloses a copier mechanism which would not be served by a wet

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environment. More particularly, wet processing would not be considered by one of ordinary skill in the art considering the Beaudreau et al. disclosure.

Second, another compelling reason that the references fail to teach or disclose Applicant's invention is that Beaudreau relates to the sheet feeding, more specifically to the *separating* of film sheets from a stack of films in order to avoid multi-sheet feeding.

Applicant previously pointed out why one of ordinary skill would not seek to combine Beaudreau with Pender, and moreover, why Beaudreau et al. itself, in order to anticipate or make obvious the present invention, would require modification, in other words, to become a different reference before it can even be applied.

Furthermore, the modification required for Beaudreau et al. would render Beaudreau et al. unfit for the very purpose for which the invention was designed, namely for separation of sheets.

This distinction and appreciation for what the Applicant's novel invention provides may be seen from considering Beaudreau for what Beaudreau fairly discloses. While the Examiner relies on the teaching of Beaudreau et al., it is the Beaudreau et al. separation mechanism and not the transport mechanism that is relied on. For the reasons discussed herein, it would not have been obvious to arrive at the Applicant's claimed invention with the teaching or disclosures of Beaudreau et al. and Pender.

One of ordinary skill in the art would not look to modify the separation rollers (18, 20 and 118, 120) of Beaudreau et al. with Pender. Doing so would provide a first roller traveling in one direction and a second roller traveling in the same direction.

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That combination would provide a hindrance to transport. One of ordinary skill in the art looking to Beaudreau et al. would appreciate and understand that there must be at least two frictional forces involved, each one having its own frictional coefficient and effect. The result of modifying Beaudreau et al. with the Pender elements would first have transport in a single direction, since Pender's arrangement of the so called bordering elevations, considering e.g., end member 70 and friction disk 71 (see Fig. 2 of Beaudreau et al.) would teach that the friction of the driven roller 70 (the one driven by the shaft 330) would in turn drive the friction disk or wheel 71 in an opposite rotational direction. That modification would be contrary to the purpose of Beaudreau et al., since, if made, Beaudreau et al. would then, upon encountering multiple paper sheets, tend to feed both sheets through at the same time. Rather, Beaudreau et al. discloses and illustrates rollers (18, 20; 118, 120) traveling in the same rotational direction (meaning that one roller (12; 120) is feeding rearward with respect to the transport direction, and the other roller (17; 118) is feeding forwardly relative to the transport direction). One of ordinary skill in the art would not seek to combine the cited references, especially where the drive configurations and their results are inconsistent.

Consider Beaudreau et al. with regard to the Figures, more specifically to Figs. 1, 2 and 4, the rollers (18, 20; 118, 120) rotate in the same direction (with regard to Fig. 1: col. 2, line 67 to col. 3, line 2; with regard to Fig. 4: col. 4, lines 56-57). These rollers are explicitly designed to be separation rollers (col. 2, line 67, col. 4, line 56). The function thereof is that these rollers urge a first sheet (of paper for example) forward along the sheet path and urge a second sheet unintentionally being conveyed

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back to the stack of sheets (col. 3, lines 2-7). For this purpose, the bottom separation roller (20; 120) provides a coefficient of friction with a sheet that is greater than a coefficient of friction between sheets so that it can separate two sheets, and the top separation roller (18; 118) provides a coefficient of friction with a sheet that is greater than the coefficient of friction between the bottom, roller and a sheet so that the top roller can urge a sheet forward even if only one sheet is between the rollers and is being urged in both directions (col. 3, lines 59-67).

Beaudreau et al. teach conveying sheet by sheet along a sheet path. The rollers which have the feature of staggered elevations serve the separation of sheets if two sheets are fed into the sheet path unintentionally. If the Beaudreau et al. reference would be combined with the Pender reference to further teach bordering elevations at the separation rollers, as discussed in the Office Action, a device would result in which friction occurs between the rollers and the surfaces of the sheet. Beaudreau et al. require having such friction in order to eventually separate two sheets, but also tolerate friction if only one sheet is transported (col. 5, lines 17-22). However, such result is highly undesirable in terms of conveying sensitive sheets because any dirt or dust would inevitably be impressed into the surface of the sheets or at least the sheets' surfaces would be damaged by scratching. It is the primary aim of the present invention to just prevent such damaging and for this purpose provide a method which consist in very smooth handling thereof. The handling of the Beaudreau device, in contrast, is very crude. Thus, combining Beaudreau with Pender would not result in the required device but just in the opposite thereof.

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The result would even be further contrary to Beaudreau et al., when considering the Examiner's position that Beaudreau et al. is sought to be modified with bordering elevations, as taught by Pender. If the Pender modifications indeed are bordering rollers, then this would not be desirable in combination with Beaudreau et al., since Beaudreau et al. relies on friction between its rollers (18, 12 and 118, 120) acting respectively on the sheets of paper being transported. Therefore, one of ordinary skill in the art would understand Beaudreau et al. to not desire to separate the rollers (18, 12) through a floating arrangement, as Pender does, as Beaudreau does not want to accommodate a thickness of sheets (e.g., multiple sheet passage) but rather limit it. Applying Pender's teachings would be contrary to the purpose of Beaudreau et al. After all, Pender discloses that "axle 16 'floats' and rollers 11 function to hold a printed circuit board" (col. 4, lines 19-20), and Pender discloses the rollers 11 to be opposite of the roller 10. Therefore, applying Pender's teachings to Beaudreau would not have been obvious to one of ordinary skill in the art seeking to limit multiple sheet passage. The result of such a combination would destroy the purpose of Beaudreau et al., not only as a result of the reversed and inconsistent transport direction (as discussed above), but also by attempting to accommodate simultaneous, multiple sheet feeding.

The combination of Beaudreau et al. and Pender would not be obvious for additional reasons. The device of Beaudreau et al. having staggered separation rollers 118, 120 seems to have a set distance D between the annular contact surfaces 144 and 146 such that the sheets traveling between the rollers become undulated (Fig. 2; col. 5, lines 29-40). Using the device of the present invention requires that the

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distance between the staggered rollers is constant and adjusted to a certain distance.

This distance is set by having the bordering elevations facing each other and thus traveling on each other.

Applicant's invention, as recited in claim 1, is distinguishable over, and not obvious in view of the cited references. Applicant recites a device for transporting printed circuit boards or foils in conveyORIZED lines for wet-processing, and includes staggered elevations on opposite rollers, as well as bordering elevations. Claim 1 includes these features:

b) transport drives associated with said rollers, wherein the elevations (7) on the first roller (1) of a pair of rollers located on one side of the plane of transportation (12) are staggered relative to the elevations (7) provided on the second roller (2) of the pair of rollers on the other side of the plane of transportation (12);

wherein said elevations are located along the plane of transportation in the region of the conveying path for contacting printed circuit boards or printed circuit foils; and

wherein there is provided at least one bordering elevation (9) at the end of the rollers (1, 2), said bordering elevation annularly encircling the respective one of the rollers (1, 2), and wherein said bordering elevations (9) are disposed on the rollers (1, 2) of a pair of rollers so as to face each other.

Claim 14, a method claim, also includes these features.

The Examiner states that Pender would teach bordering elevations 70, 71, 72, 28 (page 4 in the Office Action). As may be seen from Fig. 2 and col. 4, lines 20-23 in the Pender reference, however, Pender's upper roller 11 and lower roller 10 are used to hold a PCB in position as it clamps same between opposite rollers. Thus, the function of the rollers and disks in the Pender reference is different to what is aimed at according to the present invention: The present invention seeks to prevent interdigitating of the staggered elevations and have same be located at a preset

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distance to each other. Pender does not disclose having the rollers being set at a certain distance and thus does not disclose preventing interdigitating of the disks on the axles.

As those skilled in the art would hence not have had a motivation to modify the device of Beaudreau et al. to additionally comprise bordering elevations of Pender, the invention is not obvious in view of a combination of Beaudreau et al. with Pender.

In addition, Beaudreau et al. discloses transporting the sheets with a feed roller (12, 112) that frictionally compels the sheet into the sheet path (see col. 2, lines 62-64). In Beaudreau, a weight (138) is used to impart a frictional force from the roller (12,112) onto the paper/film to be transported. Using the Beaudreau weight (138) to force the roller (12,112) onto the sheet to be transported also would contravene the very purpose of the Applicant's invention. Applicant desires to accommodate dirt or debris that may be present, and to prevent the roller from impressing that dirt or debris onto the surface of the workpieces. This is contrary to Beaudreau's transport roller (12,112) which discloses weighing down the roller so that the transport roller (12,112) is pressed against the sheet (134), and, moreover the stack of sheets (114). Therefore, Beaudreau teaches to apply pressure to not only the surface of a sheet during and to accomplish transportation, but also to other sheets in a stack (114) which are underlying the contacted sheet (134). When considered for what this reference fairly discloses, Applicant's claimed invention is not obvious.

One of ordinary skill in the art would not gain from Beaudreau the teaching to arrive at the Applicant's present invention. To the contrary, Beaudreau's transport

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teaching and disclosure does not anticipate or render obvious the Applicant's invention.

The combination of Pender and Beaudreau et al. is neither obvious nor practical. If Pender were used to modify Beaudreau et al., first, the separation mechanism would not be workable. The Examiner cites Pender for simplifying the drive. The application of Pender to Beaudreau's separation rollers would not be workable or practical, as these rollers are provided with discrete directional and frictional operational characteristics to prevent multiple sheets from being advanced. If Pender is applied, that would defeat the purpose and operational function of Beaudreau et al., since, Beaudreau desires not to accommodate the thickness of the piece traveling through the separation rollers (12,112) referenced by the Examiner in the rejection. Rather, if that were to occur, then each time in Beaudreau et al. that there was an increased thickness (e.g., two sheets attempting to travel through the "separation rollers" together), then, even if Pender were applied, then to do what Applicant's invention provides, that would mean that the sheets would be accommodated so both of them could pass (in other words, a lessening of the pressure on the transported workpiece). This would not be consistent with the operation of Beaudreau, but rather, would be contrary to Beaudreau et al.'s purpose and teachings. Accordingly, for these additional reasons, one of ordinary skill in the art would not attempt to make the combination.

A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be led in a direction divergent from the path that was taken by the applicant.

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In re: Gurley, 27 F.3d 551, 31 U.S.P.Q. 2d 1130 (Fed. Cir. 2006).

The combination is not obvious for additional reasons. Conversely, even considering the application of Pender to the Beaudreau et al. transport rollers (as opposed to the separation rollers) still fails to result in the Applicant's invention. Applying Pender to the Beaudreau transport roller (12,112) also would not arrive at the Applicant's invention. Such a combination is not obvious, nor would it be practical. If the transportation roller (12,112) of Beaudreau were accommodated with the Pender proposed modification, then the associated weight (138) would lose its purpose and function as the roller (12,112) would be lifted. The combination of Pender and Beaudreau would not have been an obvious one, let alone a practical suggestion to one of ordinary skill in the art, and furthermore, even if attempted still would not arrive at the Applicant's claimed invention. An obviousness rejection is improper where a combination of references on which the rejection is based produces a seemingly inoperative device. *In Re: Spinnoble*, 405 F.2d 578, 587, 160 U.S.P.Q. 237 (CCPA 1969).

Accordingly, for the reasons set forth above, there is no *prima facie* case of obviousness. Those skilled in the art would not have looked to the teachings of Beaudreau et al. or Pender, and would not have been motivated or taught to combine them.

NEW CLAIM 22:

Applicant has presented new claim 22 which is based on original claim 1, but with language expressly reciting the feature that the rollers are driven to rotate in opposite directions. Claim 22 now recites that:

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b) transport drives associated with said rollers, wherein said transport drives are associated with said rollers so that at least one first roller located on one side of the plane of transportation is driven in a first rotational direction and at least one second roller located on the other side of the plane of transportation is driven in rotational direction opposite of said first rotational direction,

The invention recited in claim 22 more particularly distinguishes the Applicant's present invention over the cited art and is not disclosed or suggested by the cited references. Moreover, what is recited in claim 22 would be contrary to the cited references as discussed above.

For the reasons set forth above, Applicant hereby respectfully requests reconsideration and a withdrawal of all outstanding rejections. Early allowance of the pending claims is earnestly solicited.

CONCLUSION

As set forth above, it can be appreciated that the Applicant's inventive solution, as disclosed and claimed, is novel and unobvious, and solves a problem in the wet-processing art which the prior art references do not address. Applicant's invention should be patentable.

If further matters remain in connection with this case, the Examiner is invited to telephone the Applicant's undersigned representative to resolve them.

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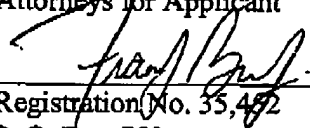
If an extension of time is required, one is hereby requested.

Respectfully submitted,

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Date: 12/18/07